SVKM's
D. J. Sanghvi College of Engineering

Program: B.Tech in Chemical Engineering **Academic Year: 2022** **Duration: 3 hours**
Date: 06.01.2023
Time: 10:30 am to 01:30 pm
Subject: Nanotechnology (Semester VII) **Marks: 75**

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover page of the Answer Book, which is provided for their use.

(1) This question paper contains two pages.
(2) All Questions are Compulsory.
(3) All questions carry equal marks.
(4) Answer to each new question is to be started on a fresh page.
(5) Figures in the brackets on the right indicate full marks.
(6) Assume suitable data wherever required, but justify it.
(7) Draw the neat labelled diagrams, wherever necessary.

Question No.		Max. Marks
Q1 (a)	Write short notes on **ANY TWO**: (i) Molecular Recognition (ii) Electrical Conduction and Ohms Law (iii) Bio systems	10
Q1 (b)	Explain Raman Microscopy for characterization of Nanostructures	5
Q2 (a)	Describe **ANY ONE** of the following Nano-structuring methods (i) Atomic Lithography (ii) Gas Evaporation	10
Q2 (b)	Explain Physical Properties of CNT **OR** Explain Applications of Gold Nanoparticles	5
Q3 (a)	How Sol Gel Processing can be used for nano-synthesis?	10
Q3 (b)	Describe- 'Applications of Nano-biology'	5

	OR 'Electronic effects of biomolecule-nanoparticle interaction'	
Q4 (a)	Describe **ANY ONE** of the following for fullerene synthesis (i) Supercritical oligomerization process (ii) Electric Arc Process	10
Q4 (b)	Write a note on 'Influence of Electrostatic Interactions in the binding of Proteins with Nanoparticles'	5
Q5 (a)	Explain HIPCO Process for CNT synthesis	10
Q5 (b)	Explain Interaction between Biomolecules & Nanoparticle Surface **OR** Explain Inorganic materials used for the synthesis of Hybrid Nano-bio assemblies	5

All the Best!